

REMARKS

Status of the Claims

Claims 1-3 and 34-55 are pending in the present application. Claims 1-3 and 34-40 stand rejected, and Claims 41-58 are withdrawn as being drawn to a non-elected species. Claims 1-3 stand rejected under Section 102(b) as being anticipated by U.S. Patent No. 5,777,300 to Homma et al. (Homma). Claims 1 and 2 stand rejected under Section 102(b) as being anticipated by JP. Patent No. 2002-217183 to Sha et al. (Sha). Claims 34-37, 39 and 40 stand rejected under Section 103(a) as being unpatentable over Homma, in view of U.S. Patent No. 5,100,496 to Ohmi et al. (Ohmi). Claim 38 is rejected under Section 103(a) as being unpatentable over Homma et al and Ohmi et al as applied to Claims 34-37, 39 and 40 above, and further in view of U.S. Patent Publication NO. 2003/0033980A1 to Campbell et al. and Sha et al. Claims 3 and 34-40 stand rejected under Section 103(a) as being unpatentable over Sha in view of Ohmi and Campbell.

Claim 1 has been amended to recite the subject matter of Claim 34. Claims 35-40 have been amended to depend from Claim 1.

Applicants hereby request further consideration of the application in view of the amendments above and the comments that follow.

The Rejections under Sections 102 and 103

Claim 1 recites apparatus for depositing a thin film, including:

- a) a reaction chamber;
- b) a reaction gas provider to supply a reaction gas and/or inert gas to the reaction chamber;
- c) an oxidant provider to supply a first oxidant and a second oxidant to the reaction chamber; and
- d) an air drain to exhaust gas from the apparatus;
- e) wherein the oxidant provider is operable to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas, and the oxidant provider includes:
 - an oxidant generator to generate the first oxidant;
 - an oxidant container to store the second oxidant;
 - a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator; and

a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas.

As noted above, Claim 1 has been amended to recite the subject matter of original Claim 34. Claim 34 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Homma in view of Ohmi or, alternatively, as being unpatentable over Sha in view of Ohmi and Campbell.

Applicants submit that Homma and Sha merely propose providing first and second oxidant vapor through independent supply lines to the reaction chamber. Independent supply lines of oxidant vapors are known and discussed on page 3, lines 22-28 of Applicants' specification. The Action concedes that Homma and Sha do not teach a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator or a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas. However, the Action relies on Ohmi as teaching a known type of vaporizer, and concludes that the combination is a "simple substitution of one known element for another to obtain predictable results..." *See* the Action, page 6.

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. M.P.E.P. § 2143. As stated in the M.P.E.P. § 2143.02:

Reasonable Expectation of Success Is Required

A rational to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. (emphasis added)(citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950))

Ohmi proposes a diluted anhydrous hydrogen fluoride gas generator **1**, an inert gas cylinder **2**, and a processing chamber **3**. *See* col. 6, line 64 – col. 7, line 18 and **Figure 1** (reproduced above). The Action apparently takes the position that the gas generator **1** is analogous to the oxidant container, the inert gas cylinder **2** is analogous to the oxidant generator, and the processing chamber **3** is analogous to the reaction chamber. *See* the Action, page 8. Notably, the gas generator **1** and inert gas cylinder **2** of Ohmi do not appear related to oxidants. Therefore, Ohmi also does not disclose "a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator" or "a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas" as recited in Claim 1.

Applicants submit that, even if a reason for combining the disclosures of the independent supply lines of Homma and Sha with the vaporizer of Ohmi could be articulated, the result of such a combination would be that the inert gas cylinder **2** of Ohmi would be used to provide a carrier gas in the independent supply lines of Homma or Sha. There is no apparent reason to modify the inert gas cylinder **2** in the vaporizer of Ohmi and the independent supply lines of Homma and Sha to provide the invention recited in Claim 1, *i.e.*, to fluidly connect the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas. Accordingly, the invention recited in Claim 1 is not a simple substitution of known elements with no change in their respective functions that yields nothing more than predictable results.

M.P.E.P. § 2143.02.

According to embodiments of the present invention, a mixture of the first and second oxidants is provided to the reaction chamber **60** via the line **62**, and thereafter the first oxidant is provided to the reaction chamber **60** alone (*i.e.*, without the second oxidant) via the line **92** only. In particular embodiments, water vapor and ozone are simultaneously provided to the reaction chamber in an initial step of the deposition process, and then only ozone is provided to the reaction chamber to achieve good step coverage. Such methods may be employed to achieve rapid deposition. *See* Applicants' specification, page 10, lines 24-31. Applicants

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submit that these potential advantages of embodiments according to the invention are not appreciated by the cited prior art.

The deficiencies of Homma, Sha and Ohmi are not cured by Campbell, which is cited in the Action on page 6 as merely teaching the use of water and ozone as oxidant gases.

For at least these reasons, Applicants submit that Claim 1 is patentable over the cited art. Claims 2-3 and 35-40 depend from Claim 1 and are patentable at least per the patentability of the claims from which they depend. Accordingly, Applicants request that the rejections under 35 U.S.C. 102/103 be withdrawn.

CONCLUSION

Applicants respectfully submit that this application is now in condition for allowance, which action is requested. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,



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CERTIFICATION OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on February 27, 2008.

Signature: Joyce Paoli
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